Radius Of Earth (Classical Trigonometry)

written by Nirmal Raj Joshi | July 17, 2025

Suppose that, while lying on a beach near the equator watching the sun set over a calm ocean, you start a stopwatch just as the top of the sun disappears. You then stand, elevating your eyes by a height H=1.7m, and stop the watch when the top of the sun again disappears. If the elapsed time is t=11.1 secs, what is the radius r of the earth?

Solution

One day=24hrs=86400sec

The earht rotate 2*pi() in one day=2*pi=6.2832 radians

angle traversed in 11.1sec=0.000807215 radians

observation height=1.7m

R=(h*cosX)/(1-cosX)=5.22E+06